AMENDMENTS TO THE CLAIMS

Please enter the following amendments without prejudice or disclaimer.

Please cancel claims 44-50 and 52-54 without prejudice or disclaimer.

This listing of claims will replace all prior versions, and listings, of claims in the application:

In the claims

Claims 1-30 (Cancelled)

Claim 31. (Currently amended): A diagnostic reagent for hepatitis C virus (HCV) infection comprising a solid phase sensitized with a mixture of a genetic recombinant HCV antigen and synthesized HCV antigens which comprise core peptide, NS4 peptide and NS5 peptide, wherein each of HCV antigens are sensitized onto a solid phase of carrier particles

Claim 32 (Previously presented) The diagnostic reagent of claim 31, wherein the genetic recombinant HCV antigen is an HCV non-structural region proteins.

Claim 33 (Previously presented): The diagnostic reagent of claim 31, wherein the genetic recombinant HCV antigen is NS3 antigen.

Claim 34 (Previously presented): The diagnostic reagent of claim 31, wherein the synthesized HCV antigen is selected from the group consisting of HCV non-structural region proteins and HCV structural region proteins.

Claim 35 (Previously presented): The diagnostic reagent of claim 31, wherein the solid phase is directly sensitized with the genetic recombinant HCV antigen.

Claim 36 (Currently amended): A diagnostic reagent for hepatitis C virus (HCV) infection comprising a solid phase sensitized with a mixture of a genetic recombinant HCV antigen

conjugated

and one or more synthesized HCV antigens, ~~wherein the synthesized HCV antigen~~ is conjugated with a carrier protein, wherein each of the antigens are sensitized on to the carrier particles

Claim 37 (Previously presented): The diagnostic reagent of claim 36, wherein the synthesized HCV antigen is selected from the group consisting of core peptide, NS4 peptide and NS5 peptide.

Claim 38 (Previously presented): The diagnostic reagent of claim 36, wherein the synthesized HCV antigen is selected from the group consisting of HCV non-structural region proteins and HCV structural region proteins.

Claim 39 (Previously presented): The diagnostic reagent of claim 36, wherein the synthesized HCV antigen comprises core peptide, NS4 peptide and NS5 peptide.

Claim 40 (Previously presented): The diagnostic reagent of claim 36, wherein the carrier protein and the synthesized HCV antigen are present at a ratio of about 1:3 to 1:20 (carrier protein: synthesized HCV antigen).

Claim 41 (Previously presented): The diagnostic reagent of claim 36, wherein the carrier protein is a water-soluble protein.

Claim 42 (Previously presented): The diagnostic reagent of claim 41, wherein the water-soluble protein is selected from the group consisting of BSA, ovalbumin and hemocyanin.

Claim 43 (Previously presented): The diagnostic reagent of claim 36, wherein the genetic recombinant HCV antigen is conjugated with a carrier protein.

Claims 44-50 (Cancelled)

Claim 51 (Currently amended): [[A]] The diagnostic reagent ~~for hepatitis C virus (HCV) infection comprising a solid phase sensitized with a genetic recombinant HCV antigen and one or more synthesized HCV antigens~~ of claim 31, wherein the solid phase is carrier particles.

Claims 52-54 (Cancelled)

Claim 55 (Previously presented): The diagnostic reagent of claim 51, wherein the carrier particle is selected from the group consisting of polystyrene latex particle, copolymer latex particle, erythrocyte and gelatin particle.

Claim 56 (New): The diagnostic reagent of claim 36, wherein the solid phase is carrier particles.

Claim 57 (New): The diagnostic reagent of claim 56, wherein the carrier particles are selected from the group consisting of polystyrene latex particle, copolymer latex particle, erythrocyte and gelatin particle.

CONCLUSION

Applicants believe that all issues raised in the Office Action have been properly addressed in this response. Accordingly, reconsideration and allowance of the pending claims is respectfully requested. If the Examiner feels that a telephone interview would serve to facilitate resolution of any outstanding issues, the Examiner is encouraged to contact Applicants' representative at the telephone number below.

In the unlikely event that the transmittal letter is separated from this document and the Patent Office determines that an extension and/or other relief is required, Applicants petition for any required relief including extensions of time and authorize the Assistant Commissioner to charge the cost of such petitions and/or other fees due in connection with the filing of this document to **Deposit Account No. 03-1952** referencing docket no. 322732000401.

Dated: October 15, 2004

Respectfully submitted,

By Karen R Zachow

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expectation of success must both be found in the prior art, not in applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20USPQ2d 1438 (Fed. Cir. 1991); MPEP §2143. If any one of these three criteria is not met, a *prima facie* case of obviousness has not been established. As presented below, Applicants respectfully submit that a *prima facie* case of obviousness has not been established.

As amended herein, the claimed invention is directed to a diagnostic reagent for hepatitis C virus (HCV) infection comprising a solid phase sensitized with a mixture of a genetic recombinant HCV antigen and synthesized HCV antigens comprising core, NS4 and NS5 peptides. The claimed invention is also directed to a diagnostic reagent for HCV infection comprising a solid phase sensitized with a mixture of a genetic recombinant HCV antigen and one or more synthesized HCV antigens conjugated with a carrier protein.

Lee describes use of a third-generation HCV screening assay produced by Chiron Corporation referred to as HCV RIBA 3.0. As described on page 846, left column, this is an immunoblot strip assay which contains synthetic NS4 and core peptides and recombinant NS3 and NS5 proteins. In the strip immunoassay of Lee, each of the HCV antigens are immobilized on the test strip in individual bands, i.e., the antigens are not used as an antigen mixture.[1] The assay results of individual antigens are shown in Tables 3 and 4 of Lee. Thus, Lee does not describe or suggest an assay of a mixture of HCV antigens. In addition, Lee does not mention or suggest the use of a synthetic NS5 peptide, either alone or in combination with other antigens. Lee also does not teach or suggest the conjugation of a synthetic HCV antigen to a carrier protein.

Rosa describes a prototype ELISA for serodiagnosis of HCV which involves a combination of a synthetic NS4-NS5 chimeric antigen and a recombinant core-NS3 chimeric antigen. As noted by the Examiner, at page 230, Rosa suggests the use of synthetic NS5 peptides in an attempt to avoid false reactivity associated with some NS5 antigen preparations. Notably, Rosa makes no mention of any false reactivity associated with core or NS3 antigens. Rosa does not

[1] See, Exhibit A for the product explanation for Chiron Corporation's HCV RIBA 3.0 assay described in Lee. This information was obtained from the U.S. Food and Drug Administration web-site: http://www.fda.gov/cber/label/hcvchir021199LB.pdf. Pages 1 and 2 provide an explanation of the assay and page 12 provides an illustration of the test strip with the individual antigens indicated.

describe or suggest the use of a synthetic core peptide nor the conjugation of a carrier protein to the chimeric antigens. Thus, Rosa does not teach or suggest the mixture of HCV antigens as claimed.

Wang describes the use of synthetic NS-3 peptides and synthetic core peptides in an immunoassay-based HCV detection method. The Examiner points to columns 34 and 35 of Wang as describing conjugation of the synthetic peptides to BSA and the absorption of the conjugated peptides onto a solid phase, such as erythrocytes and particles. Wang, however, does not teach or suggest the use of a mixture of a recombinant HCV antigen and synthetic HCV antigen as claimed.

The Examiner asserts that it would have been obvious to one of ordinary skill in the art to be motivated by the cited references to use the claimed detecting agent. Office Action, pages 3-4. Applicants disagree with this assertion.

Although various HCV antigen proteins are known in the art, Applicants respectfully submit that there is no motivation in the references or in the art to make a diagnostic reagent with the particular combination HCV antigens as claimed. The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990). The Examiner has not provided support with reasonable specificity for suggestion or motivation for a skilled artisan to modify the teachings of the cited references to substitute the antigens taught in the references with the particular antigen mixture in the claimed invention. There is no suggestion in Lee, Rosa or Wang that the diagnostic reagents described therein are in any way unsatisfactory, accordingly, there is no reason for the skilled person to have substituted the claimed antigens for those of the references. This rejection appears to be based on hindsight in view of the present specification. It is only the existence of benefits associated with the claimed reagent as described in the present specification that the skilled person would have become motivated to explore the use of alternatives to that in the references.

Applicants respectfully submit that there is no motivation or suggestion to combine Lee with Rosa and Wang. Since Lee teaches an assay using individual antigens, i.e., not an antigen

mixture, one of skill in the art would not have been motivated to look to Lee for guidance regarding a detection assay that uses an antigen mixture. In addition, Lee's results with individual antigens does not provide a skilled artisan any expectation of success for a reagent made of a mixture of antigens as claimed.

Thus, Applicants respectfully submit that a *prima facie* case of obviousness has not been established.

Accordingly, Applicants respectfully request reconsideration and withdrawal of the rejections under 35 U.S.C. §103.

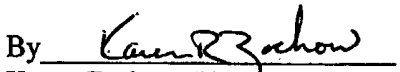
CONCLUSION

Applicants believe that all issues raised in the Office Action have been properly addressed in this response. Accordingly, reconsideration and allowance of the pending claims is respectfully requested. If the Examiner feels that a telephone interview would serve to facilitate resolution of any outstanding issues, the Examiner is encouraged to contact Applicants' representative at the telephone number below.

In the unlikely event that the transmittal letter is separated from this document and the Patent Office determines that an extension and/or other relief is required, Applicants petition for any required relief including extensions of time and authorize the Assistant Commissioner to charge the cost of such petitions and/or other fees due in connection with the filing of this document to **Deposit Account No. 03-1952** referencing docket no. 322732000401.

Dated: October 15, 2004

Respectfully submitted,

By 

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